Installing a WAN Adapter Module in a BayStack ARN Router

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Bay Networks

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Meets requirements of:

FCC Part 15, Class A
EN 55 022 (CISPR 22:1985), Class A <and Class B>
VCCI Class 1 ITE

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

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Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

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Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

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This digital apparatus (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Réglement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Réglement sur le brouillage radioélectrique du ministère des Communications du Canada.

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About This Guide

If you are responsible for installing or maintaining a Bay Networks™ BayStack™ Advanced Remote Node™ (ARN™) router, read this guide to discover how to install any of the following WAN adapter modules in the ARN router:

- DSU/CSU
- V.34 Modem
- Serial
- ISDN BRI with U interface
- ISDN BRI with S/T interface

Before You Begin

Make sure that you are running the latest version of Bay Networks Site Manager and router software. The ARN requires Router Software Version 11.00 Rev. 4n or later.

Conventions

bold text	Indicates text that you need to enter, command names, and buttons in menu paths. Example: Enter **wfsm &**
	Example: Use the **dinfo** command.
	Example: ATM DXI > Interfaces > **PVCs** identifies the PVCs button in the window that appears when you select the Interfaces option from the ATM DXI menu.
italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.

Acronyms

CSU/DSU	channel service unit/digital service unit
ISDN	Integrated Services Digital Network
WAN	wide area network

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Technical Support and Online Services

To ensure comprehensive network support to our customers and partners worldwide, Bay Networks Customer Service has Technical Response Centers in key locations around the globe:

- Billerica, Massachusetts
- Santa Clara, California
- Sydney, Australia
- Tokyo, Japan
- Valbonne, France

The Technical Response Centers are connected via a redundant Frame Relay Network to a Common Problem Resolution system, enabling them to transmit and share information, and to provide live, around-the-clock support 365 days a year.

Bay Networks Information Services complement the Bay Networks Service program portfolio by giving customers and partners access to the most current technical and support information through a choice of access/retrieval means. These include the World Wide Web, CompuServe, Support Source CD, Customer Support FTP, and InfoFACTS document fax service.

Bay Networks Customer Service

If you purchased your Bay Networks product from a distributor or authorized reseller, contact that distributor's or reseller's technical support staff for assistance with installation, configuration, troubleshooting, or integration issues.

Customers can also purchase direct support from Bay Networks through a variety of service programs. As part of our PhonePlus™ program, Bay Networks Service sets the industry standard, with 24-hour, 7-days-a-week telephone support available worldwide at no extra cost. Our complete range of contract and noncontract services also includes equipment staging and integration, installation support, on-site services, and replacement parts delivery -- within approximately 4 hours.

To purchase any of the Bay Networks support programs, or if you have questions on program features, use the following numbers:

Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 436-8880 (direct)	(508) 670-8766
Europe	(33) 92-968-300	(33) 92-968-301
Asia/Pacific Region	(612) 9927-8800	(612) 9927-8811
Latin America	(407) 997-1713	(407) 997-1714

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

Bay Networks Information Services provide up-to-date support information as a first-line resource for network administration, expansion, and maintenance. This information is available from a variety of sources.

World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

A special benefit for contracted customers and resellers is the ability to access the Web Server to perform Case Management. This feature enables your support staff to interact directly with the network experts in our worldwide Technical Response Centers. A registered contact with a valid Site ID can

- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *http://www.baynetworks.com*. Customer Service is a menu item on that home page.

Customer Service FTP

Accessible via URL *ftp://support.baynetworks.com* (134.177.3.26), this site combines and organizes support files and documentation from across the Bay Networks product suite, including switching products from our Centillion™ and Xylogics® business units. Central management and sponsorship of this FTP site lets you quickly locate information on any of your Bay Networks products.

Support Source CD

This CD-ROM -- sent quarterly to all contracted customers -- is a complete Bay Networks Service troubleshooting knowledge database with an intelligent text search engine.

The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

CompuServe

For assistance with noncritical network support issues, Bay Networks Information Services maintain an active forum on CompuServe, a global bulletin-board system. This forum provides file services, technology conferences, and a message section to get assistance from other users.

The message section is monitored by Bay Networks engineers, who provide assistance wherever possible. Customers and resellers holding Bay Networks service contracts also have access to special libraries for advanced levels of support documentation and software. To take advantage of CompuServe's recently enhanced menu options, the Bay Networks Forum has been re-engineered to allow links to our Web sites and FTP sites.

We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you are on line with your CompuServe account, you can reach us with the command **GO BAYNET**.

InfoFACTS

InfoFACTS is the Bay Networks free 24-hour fax-on-demand service. This automated system has libraries of technical and product documents designed to help you manage and troubleshoot your Bay Networks products. The system responds to a fax from the caller or to a third party within minutes of being accessed.

To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside North America, toll calls can be made to 1-408-764-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

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Use the following numbers to reach your Bay Networks Technical Response Center:

Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
Santa Clara, CA	1-800-2LANWAN	(408) 764-1188
Valbonne, France	(33) 92-968-968	(33) 92-966-998
Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1
Installing a WAN Adapter Module

Complete the steps in this guide to install any of these WAN adapter modules in an ARN router:

- DSU/CSU interface
- V.34 Modem interface
- Serial interface
- ISDN BRI module with U interface
- ISDN BRI module with S/T interface

Although each adapter module type looks slightly different, you install them identically in the ARN front panel cage, as follows:

1. Power off the ARN.

Warning: The ARN adapter modules are *not* hot-swappable.

2. Remove the filler panel from one of the two adapter module slots; or, if present, remove an existing adapter module.
3. Attach an antistatic wrist strap.

Caution: Electrostatic discharge can damage hardware. You must wear the antistatic strap whenever you remove, install, or handle printed circuit boards.

4. Install the new module in the ARN card cage.
5. Connect network cabling.
6. Proceed to software configuration tasks.

Preparing for Installation

Before installing the adapter module:

1. **Be sure that power is turned off (0).**
2. **Unplug the power cable from the wall receptacle and from the ARN (Figure 1-1).**
3. **If present, unplug the redundant power supply cable from the ARN (Figure 1-1).**

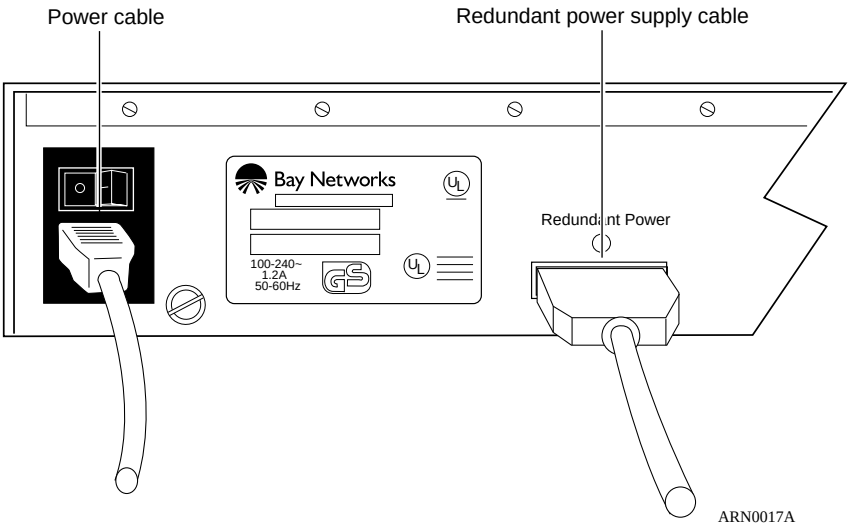

Figure 1-1. ARN Power Switch (Off) and Power Cables

4. **Determine which front-panel adapter module slot to use (Figure 1-2).**

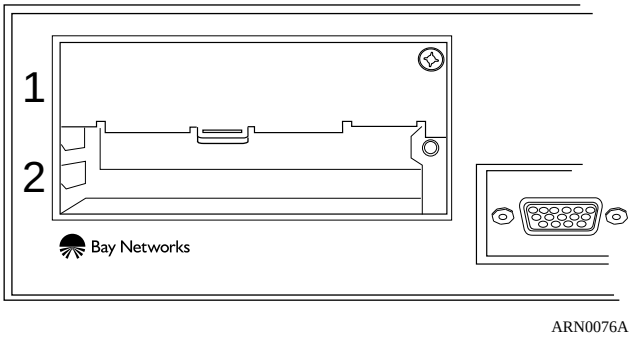

Figure 1-2. Location of Adapter Module Slots 1 and 2

5. **Attach an antistatic wrist strap.**

   You receive an antistatic wrist strap with the ARN system and with the upgrade module shipment. Refer to the instructions in the wrist strap bag.

   The wrist strap directs the discharge of static electricity from your body to the router chassis, thereby avoiding discharge to sensitive electronic components.

6. **Continue with the instructions for removing either an adapter module slot filler panel or an existing adapter module.**

   - To upgrade the ARN using an empty slot, continue with the next section, "Removing the Filler Panel."
   - To replace an adapter module, proceed to "Removing an Installed Adapter Module."

Removing the Filler Panel

To remove the filler panel from an empty adapter module slot:

1. **Using a Phillips screwdriver, remove the screw that secures the filler panel in either Slot 1 or Slot 2 (Figure 1-3).**

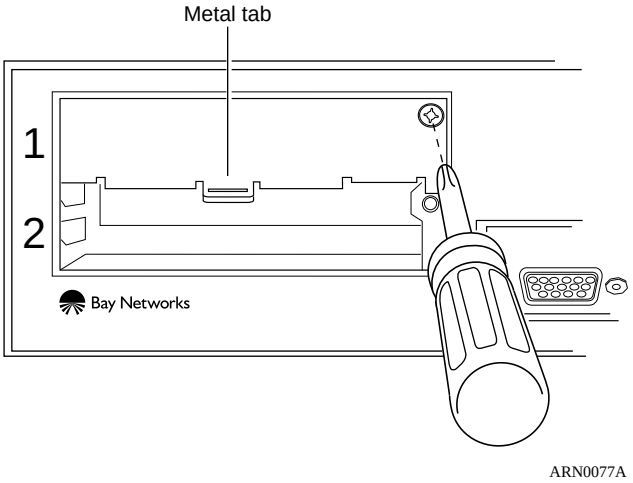

Figure 1-3. Removing the Filler Panel (Slot 1)

2. **Grasp the metal tab on the filler panel or insert the screwdriver in the slot on the tab; pull forward to remove the panel.**

   Be prepared to use some force at first, but stop pulling immediately once the two connectors are free.

3. **Set the filler panel aside.**

   To operate the ARN without an adapter module in this slot, you must reinstall the filler panel.

4. **Skip the next section and proceed to "Installing the Module."**

Removing an Installed Adapter Module

To remove an adapter module from the ARN:

1. **Using a Phillips screwdriver, remove the screw that secures the module you want to remove (Figure 1-4).**

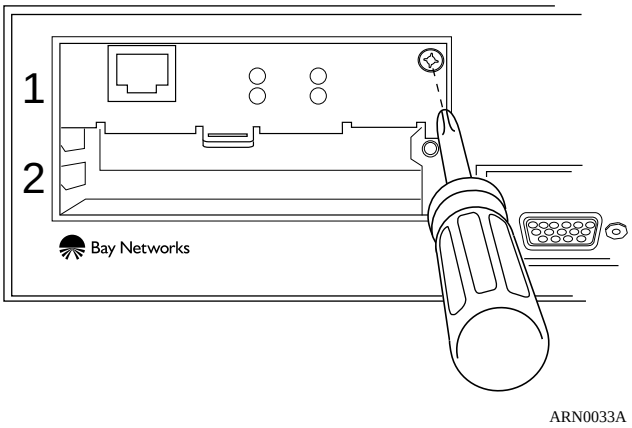

Figure 1-4. Removing the Adapter Module Screw

2. **Pull the module toward you to detach it from the base module connector inside the ARN chassis.**

   Grasp the metal tab with your fingers or insert the screwdriver into the slot on the tab.

   Be prepared to use some force at first, but stop pulling immediately once the two connectors are free.

3. **Slide the module all the way out of the card cage.**
4. **Place the removed adapter module in an antistatic bag.**
5. **Proceed to the next section to install the replacement adapter module.**

Installing the Module

To install an adapter module:

1. **Hold the adapter module with the components facing up (Figure 1-5).**

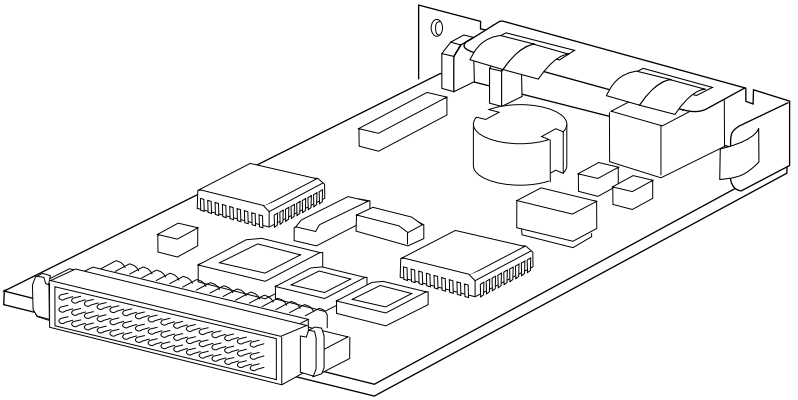

Figure 1-5. Adapter Module Ready to Be Installed

2. **Insert the end of the module with the base module connector into the card cage, engaging the guides along the side of the cage to secure the module edges.**

   Figure 1-6 shows the installation from inside the ARN.

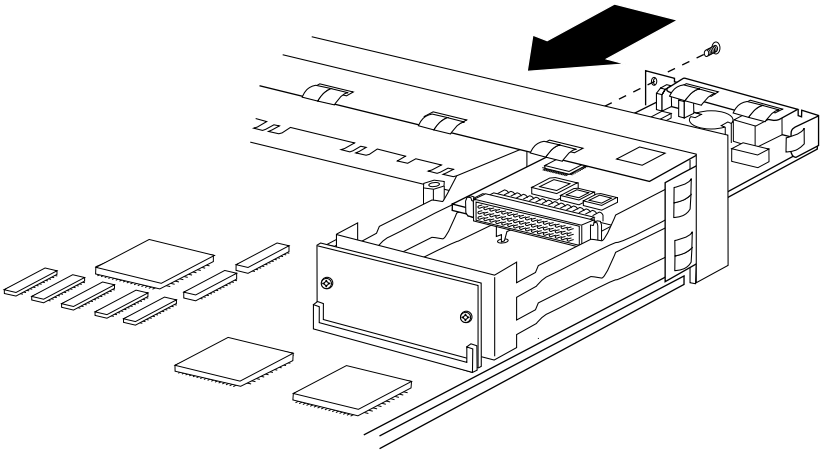

Figure 1-6. Aligning the Adapter Module with the Base Module (View Inside the ARN Chassis)

3. **Push the front of the module in until its connector pins align with the base module connector socket inside the chassis.**
4. **Using a Phillips screwdriver, insert and secure the screw (Figure 1-7).**

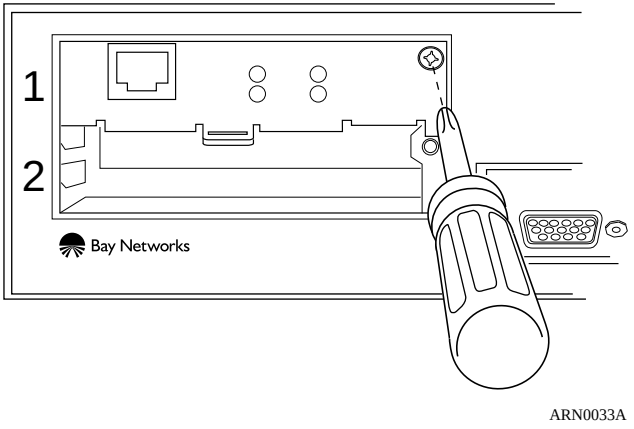

Figure 1-7. Securing the Adapter Module to the Front Panel

5. **Remove the antistatic wrist strap.**

Connecting Cables

Before reconnecting the ARN to the network, connect the appropriate WAN cabling to the new interface. Refer to the *Cable Guide for Routers and BNX Platforms* for the cables available from Bay Networks.

Figures 1-8 through 1-11 show the cable connections.

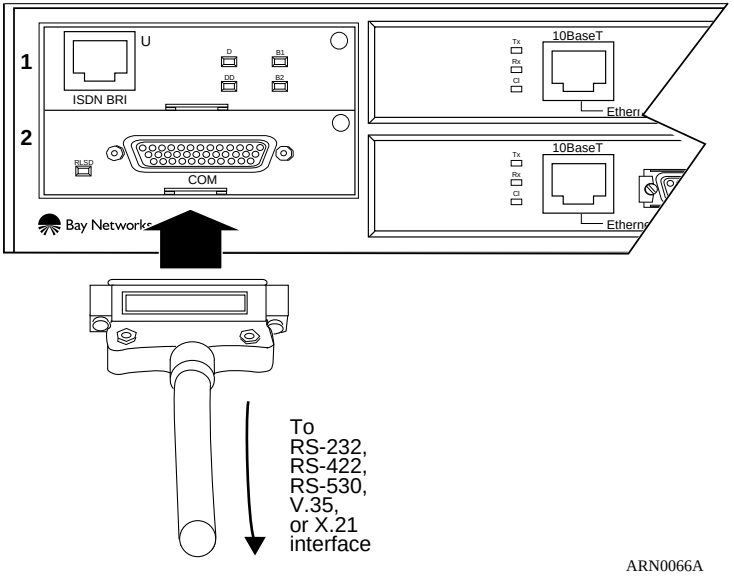

Figure 1-8. Serial Adapter Module Cable Connector

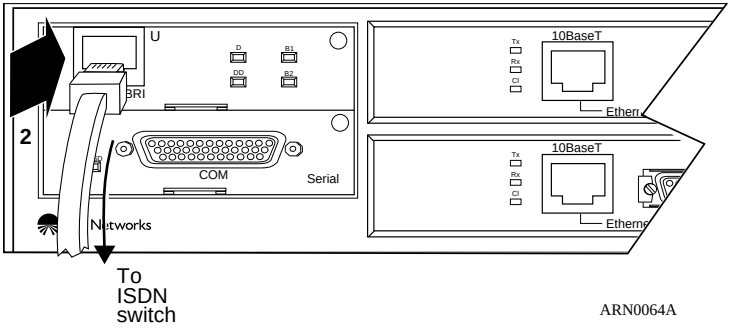

Figure 1-9. ISDN (U or S/T Interface) Module Cable Connection

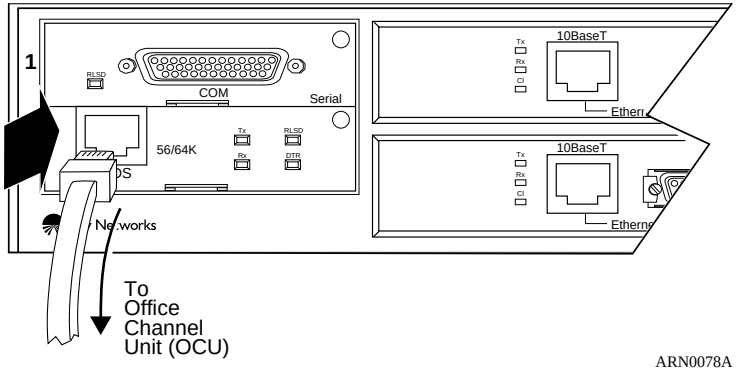

Figure 1-10. DSU/CSU Module Cable Connector

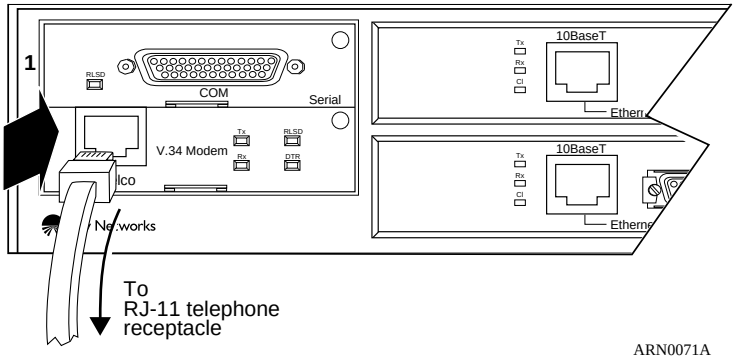

Figure 1-11. V.34 Modem Module Cable Connector

Ensuring a Successful Installation

After reconnecting the ARN to the network, you can ensure a successful upgrade by checking the diagnostic LEDs on the front panel of the base module (Figure 1-12).

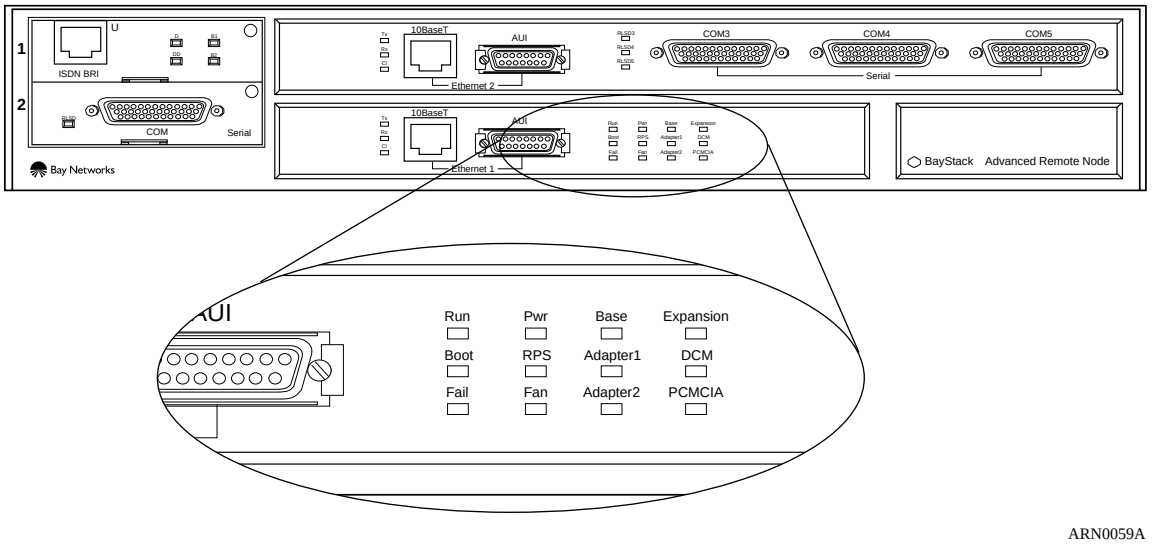

Figure 1-12. ARN Base Module Diagnostic LEDs

When you power on the ARN, the following sequence of front panel LED activity should occur:

1. All base module LEDs light momentarily; this tests that the LEDs are operational.
2. The Run, Boot, and Fail LEDs count through a short, initial startup sequence.
3. The Pwr (power) LED lights and remains on.
4. The Run LED begins flashing and continues to flash until the ARN completes all diagnostic tests.
5. As the diagnostic procedure tests each module, the LED representing that module flashes slowly. If the module passes its diagnostic test, the LED remains on. If the module fails its diagnostic test, the Fail LED remains on and the module LED flashes rapidly.

6. After completing the diagnostic testing procedure, the boot process begins. The Run and Boot LEDs indicate the boot status as shown in Table 1-1.

Table 1-1. Boot Status LEDs

Boot Status	Run LED	Boot LED
Local Boot	Off	On
Netboot (attempting)	Off	Flashing
Netboot (downloading)	Flashing	On
Interrupted (using ARN monitor)	Flashing	Flashing

7. After the boot process completes, the Run LED lights and the Boot LED turns off, indicating that the ARN is operational.

If the LEDs on the ARN light in this sequence, your upgrade is successful. Contact the network administrator to verify that the ARN is now connected to the network.

If the LEDs do not light in this sequence, the network administrator can refer to *Configuring Remote Access* to help troubleshoot the problem.

Note: If the ARN does not contain an expansion module, an adapter module, a redundant power supply, a data collection module, or a Flash card, the LEDs associated with these components remain off.

If you need additional assistance, contact your local Bay Networks Technical Response Center.

Your Next Step

To modify the ARN configuration file and connect the new interfaces to a network, you must follow the appropriate installation procedures. Refer to

- *Installing and Operating BayStack ARN Routers* or to the *Configuring Remote Access* guide for instructions on using the **inst_arn.bat** Technician Interface script
- *Configuring Routers* for information about using Site Manager to configure router interfaces
- *Modifying Software Images for Routers* for information about changing the router image

Site Manager numbers the ARN serial interfaces exactly as they are labeled. For example, even if there is no adapter module installed in Slot 1, a module in Slot 2 is COM2. Table 1-2 indicates how the physical interface labels on the ARN correspond to Site Manager connector names.

Table 1-2. Site Manager Names for ARN Adapter Module Interfaces

	Site Manager Connector Name	
Adapter Module Label	**Slot Number 1**	**Slot Number 2**
DSUCSU	COM1	COM2
ISDN BRI U	ISDN1	ISDN2
ISDN BRI S/T	ISDN1	ISDN2
V.34	COM1	COM2
Serial	COM1	COM2

Note: Be aware that adding software for your expansion module interfaces may increase the ARN memory requirements beyond its current capacity.

Contact your network administrator if you need additional information.